

KIMBERLEY et al  
Appl. No. 10/583,115  
July 1, 2008

### **REMARKS/ARGUMENTS**

Reconsideration of this application is requested. Claims 17-20 and 22- 32 are in the case.

#### **I. CLAIM OBJECTIONS**

The claims have been objected to for the reasons stated on page 2 of the Action. In response, the claims have been amended to obviate certain of these objections. With regard to the objections in paragraphs 1, 3, and 5-7, the use of the word "and" is appropriate at the end of a list of alternatives when Markush language ("selected from the group consisting of.....") is employed. Withdrawal of the claim objections is respectfully requested.

#### **II. THE PRIOR ART REJECTIONS**

Claims 17-20 and 22-24 stand rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. patent 6,777,366 to Gauthier *et al.* (Gauthier). That rejection is respectfully traversed.

The present invention relates to a process for olefin polymerization in the presence of a supported polymerisation catalyst in a reactor. Prior to injection into the reactor the catalyst, in the form of a powder, is contacted with an inert hydrocarbon liquid in a quantity sufficient to maintain the catalyst in powder form. Without conceding to any merit in the rejection(s) (discussed below), and in order to expedite prosecution, claims 17 and 31 have been amended to state that the inert hydrocarbon liquid is present in amount up to about 10% of the pore volume of the support. Basis appears in

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prior claim 21 which has been canceled without prejudice to pursuing the subject matter of that claim in a separate continuing case.

Claim 21 has not been rejected on anticipation grounds. It is believed, therefore, that the anticipation rejection of claim 17 (and all claims dependent on claim 17) over Gauthier has been obviated. Withdrawal of the anticipation of claims 17-20 and 22-24 over Gauthier is respectfully requested.

Claims 31 and 32 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over Gauthier. This rejection is respectfully traversed.

Claims 31 and dependent 32 relate to a method for the reduction of fines in effect by use of the process of claim 17. The rejection is based on the notion that Gauthier allegedly uses a substantially similar catalyst and process to those of the present invention and, hence, the same results with respect to fine reduction would be expected. This position is respectfully traversed.

First, looking at the language of claim 31, Gauthier is silent with respect to the reduction of fines. Secondly, the Gauthier supported catalyst system is added to the polymerization reactor in the form of a slurry in a viscous mineral oil which has a viscosity greater than the viscosity of the paraffinic hydrocarbon solvent in which the supported catalyst had previously been washed. In contrast, in the present invention, the supported catalyst remains in powder form, having been contacted with a minimal amount (up to about 10% pore volume) of an inert hydrocarbon liquid. This is not disclosed or suggested by Gauthier. Claims 31 and 32 are therefore not anticipated by

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or rendered obvious in view of Gauthier. Withdrawal of the anticipation/obviousness rejection of claims 31 and 32 over Gauthier is respectfully requested.

Claims 29-32 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Gauthier in view of U.S. patent 5,405,922 to DeChellis *et al.* (DeChellis). That rejection is respectfully traversed.

In the rejection of claims 31 and 32, the Action takes the position that the reduction in fines would be inherent in Gauthier. DeChellis is relied upon for its disclosure of polymerization processes carried out in a fluidized bed reactor.

As discussed above, Gauthier does not disclose or suggest the invention as now claimed in claim 17. Therefore, dependent claims 29 and 30 are also not anticipated nor rendered obvious over Gauthier.

The deficiencies of Gauthier are not cured by the DeChellis disclosure of processes utilizing fluidized bed reactors. DeChellis is irrelevant to the invention as claimed and does not give rise to a *prima facie* case of obviousness of claims 29-32, either taken alone or in combination with Gauthier. Withdrawal of this rejection is respectfully requested.

Claims 17 and 20-24 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by WO 01/25296 to Ernst *et al.* (Ernst). That rejection is respectfully traversed.

The Action refers to Example 4 of Ernst in which the supported catalyst is rinsed into the reaction vessel with liquid propylene. In contrast, in the present invention, an inert hydrocarbon liquid in a defined amount is contacted with the supported catalyst which is maintained in powder form. Propylene is clearly not an inert hydrocarbon

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solvent as required by the present invention, since it undergoes polymerization in the reactor. Ernst does not anticipate the presently claimed invention. Withdrawal of this rejection is respectfully requested.

Claim 21 is rejected under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as allegedly unpatentable over Ernst *et al.* That rejection is respectfully traversed.

As noted earlier, claim 17 has been amended to incorporate the subject matter of claim 21. Claim 21 has been canceled without prejudice. As discussed above, Ernst does not disclose the use of an inert hydrocarbon liquid. Secondly, the Action refers to the use by Ernst of a hydrocarbon (propylene) as a sweep to introduce the supported catalyst into the reactor for *a minimal time*. From this, the Action appears to suggest that the amount of hydrocarbon in the pores of the support are in a quantity as required by claim 21. This assertion is respectfully traversed.

In Example 4 of Ernst, the supported catalyst is *rinsed* into the reactor. This implies minimal contact between the supported catalyst and the large volume of propylene employed (500 g) (as compared with only 438mg of catalyst). It is impossible therefore to determine how much hydrocarbon liquid is present in the pores of the supported catalyst. In any event, the propylene is clearly **not** inert since it is subsequently polymerised by the catalyst in the reactor. Claim 21 (and amended claim 17) are clearly not anticipated by, or rendered obvious in view of, Ernst. Withdrawal of this rejection is respectfully requested.

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Claims 31 and 32 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over Ernst *et al.* This rejection is respectfully traversed.

The Action asserts that the catalyst and process of Ernst are substantially the same as those of the present invention and that it would be reasonable to expect that there will also be a reduction in fines as required by claims 31 and 32. This position is respectfully traversed.

As discussed earlier, Ernst does not disclose or suggest the use of a specific quantity of an inert hydrocarbon liquid to introduce the supported catalyst into the reactor. The present claims are therefore not anticipated or suggested by Ernst. Withdrawal of this rejection is respectfully requested.

Claims 17-19, 22-24, 31 and 32 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. 5,688,734 to Specia *et al.* (Specia). This rejection is respectfully traversed.

Specia describes drying of a supported polymerization catalyst (see, column 9, lines 1-50). In particular, it is disclosed that the supported catalyst system is contacted with a volume of hydrocarbon liquid, e.g., an aliphatic hydrocarbon (column 9, lines 29-41). The patent further discloses that the volume of hydrocarbon liquid is preferably equal to or less than that required to form a slurry, and most preferably between 0.7 and 0.95 times the total pore volume of the support (column 9, lines 34-41).

Specia therefore discloses treatment of a supported catalyst system with an inert hydrocarbon liquid but at a much higher amount of liquid with respect to the pore volume of the support. In fact, at a volume about equal to the pore volume, a slurry

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would be formed and, even at the lower limit of 0.7 times the pore volume, the supported catalyst would be almost in a slurry medium.

In the presently claimed invention, the amount of inert hydrocarbon liquid is present in an amount up to about 10% of the pore volume of the support. This represents a much lower amount than disclosed in Spec. In the present invention, no slurry medium is used. Rather, the supported catalyst is contacted with a minimal amount of the hydrocarbon liquid to maintain the catalyst in powder form. Spec. clearly does not disclose the presently claimed invention. Withdrawal of the anticipation rejection over Spec. is respectfully requested.

Claim 21 stands rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Spec. As noted earlier, the content of this claim is now incorporated into claim 17, and claim 21 has been canceled without prejudice.

The Action asserts that it would be a matter of routine experimentation to arrive at the present invention. This is not correct. The present inventors have surprisingly found that by reducing the amount of inert hydrocarbon liquid present to a minimum, but maintaining the supported catalyst in powder form, leads to advantages not contemplated by before, and certainly not by Spec. Although Spec. relates to a reduction in fouling in the reactor, Spec. is specifically concerned with prepolymerisation which is known as a procedure which may reduce reactor fouling (see Spec., at col. 1).

The present invention, on the other hand, is not directed to prepolymerization as an aid in reducing reactor fouling. Rather, the present invention is directed to the use of an improved supported catalyst system. Accordingly claim 21 (as incorporated into

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claim 17) is not anticipated by Speca. Withdrawal of the anticipation rejection over Speca is respectfully requested.

Claims 17-25 and 29-32 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. patent 5,057,475 to Canich *et al.* (Canich) in view of Speca. The Action admits that Canich does not disclose the treatment of the supported catalyst with a hydrocarbon solvent. Canich does not therefore add anything to the disclosure of Speca. In fact, apart from using Canich as an example of a supported catalyst system, the Action repeats its comments with respect to Speca, which is distinguished for the reasons discussed in detail above. As neither Canich nor Speca suggest the claimed invention, either when taken singly or in combination, it is clear that a *prima facie* of obviousness has not been generated by these two references. Withdrawal of this obviousness rejection is respectfully requested.

Claims 17-32 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. patent 5,834,393 to Jacobsen *et al.* (Jacobsen) in view of Speca. Speca has been discussed in detail above, and fails to suggest the claimed invention. Jacobsen appears or be relied upon as an example of a supported catalyst system. Jacobsen but otherwise is irrelevant to the invention as claimed. As neither Jacobsen nor Speca suggest the claimed invention, either when taken singly or in combination, it is clear that a *prima facie* of obviousness has not been generated by these two references. Withdrawal of this obviousness rejection is respectfully requested.

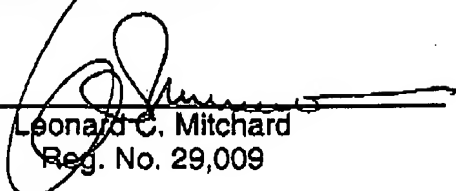
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Favorable action is awaited.

Respectfully submitted,

NIXON & VANDERHYTE P.C.

By: \_\_\_\_\_

  
Leonard C. Mitchard  
Reg. No. 29,009

LCM:lff  
901 North Glebe Road, 11th Floor  
Arlington, VA 22203-1808  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100